

A NEW SUBSPECIES OF ORNITHOPTERA PRIAMUS (LEPIDOPTERA: PAPILIONIDAE) FROM NORTH QUEENSLAND

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Introduction

Ornithoptera priamus ranges from the Moluccas, through New Guinea and the Kai (Key) and Aru Islands to the Bismarck Archipelago, the Solomon Islands and eastern Australia. The species shows considerable geographical variation which has resulted in the recognition of about 16 subspecies.

One of these subspecies, *Ornithoptera priamus pronomus* (Gray), has been considered to occur in the rain forest areas of Thursday Island, Cape York (Bamaga-Somerset) and the Iron Range (Claudie River) district (Common and Waterhouse, 1972). Investigation has shown the Iron Range population to be distinct from the more northerly population mentioned. Gray (1853 & 1856) based his description of *O. p. pronomus* on 2 ♂ and 1 ♀ collected by J. M'Gillivray during the voyage of H.M.S. *Rattlesnake* at Cape York, specimens from the Iron Range district then being unknown.

Ornithoptera priamus macalpinei subsp. n.

Material examined

Holotype ♂: QUEENSLAND, CAPE YORK PENINSULA, Claudie River, 24 May, 1974, A. & J. d'Apice (Australian Museum collection).

Paratypes:

IRON RANGE (CLAUDIE RIVER). 1 ♀, 11 Apr., 1971, A. Atkins (Atkins collection). 1 ♂, 1 mile N.E. Mt. Lamond, 15 Jan., 1972, D. K. McAlpine & G. A. Holloway; 1 ♂, 9 miles N.E. Mt. Lamond, 15 Dec., 1971, D. K. McAlpine & G. A. Holloway; 1 ♂, 1 mile W. Mt. Lamond, 13 Dec., 1971, D. K. McAlpine & G. A. Holloway; 1 ♂, 1 ♀, 1 mile W. Mt. Lamond, 19 Dec., 1971, D. K. McAlpine & G. A. Holloway; 1 ♂, 5 miles W. Mt. Lamond, 24 Dec., 1971, D. K. McAlpine & G. A. Holloway; 1 ♀, 2 miles W. Mt. Lamond, 29 Dec., 1971, D. K. McAlpine & G. A. Holloway (Australian Museum collection). 1 ♂, 1 ♀, 12 Apr., 1964, I. F. B. Common & M. S. Upton; 1 ♂, 1 ♀, 14 Apr., 1964, I. F. B. Common & M. S. Upton (Australian National Insect Collection). 1 ♂, 25 May, 1974, M. Walford-Huggins; 1 ♀, 6 Jan., 1964, M. S. Moulds (British Museum Nat. Hist. collection). 1 ♀, 9 Sep., 1974, G. Daniels; 1 ♀, bred ex pupa, Mt. Lamond, emerged 19 Oct., 1974, G. Daniels; 1 ♀, King Park homestead, 23 Oct., 1974, G. Daniels; 2 ♀, bred ex pupa, Mt. Lamond, emerged 26 Oct., 1974, G. Daniels; 1 ♂, 30 Oct., 1974, G. Daniels (Daniels collection). 1 ♀, 24 Apr., 1969, J. d'Apice; 1 ♂, 27 Apr., 1969, J. d'Apice; 1 ♂, 1 ♀, 28 Apr., 1969, J. d'Apice; 1 ♀, 28 Apr., 1969, A. d'Apice; 1 ♀, 29 Apr., 1969, A. d'Apice.

2♂, 1 May, 1969, J. d'Apice; 1♀, 4 May, 1969, A. d'Apice; 2♂, 22 May, 1974, A. & J. d'Apice; 2♀, 24 May, 1974, A. & J. d'Apice; 1♂, 1♀, 26 May, 1974, A. & J. d'Apice; 2♂, 2♀, 9 June, 1973, J. d'Apice (d'Apice collection). 1♂, 2♀, 24 May, 1974, M. Walford-Huggins; 1♀, 15 Sep., 1974, W. F. Gibb (Gibb collection). 1♀, 3 Jan., 1964, M. S. Moulds; 1♂, 22 May, 1974, M. Walford-Huggins (A. M. A. Low collection). 3♂, 16 May, 1973, G. Miller; 1♂, 18 May, 1973, G. Miller; 1♂, 22 May, 1973, G. Miller; 2♂, 1♀, 24 May, 1973, G. Miller; 1♂, 25 May, 1973, G. Miller; 1♂, bred ex pupa, Mt. Lamond, emerged 26 May, 1973, G. Miller; 1♂, 26 May, 1973, G. Miller; 2♂, 27 May, 1973, G. Miller (Miller collection). 2♂, 18 May, 1973, I. Morhaus; 1♀, bred ex pupa, emerged 20 May, 1973, I. Morhaus; 1♀, 25 May, 1973, I. Morhaus; 1♀, bred ex larva, pupated 27 May, 1973, emerged 1 Sep., 1973 (Morhaus collection). 2♀, 2 Jan., 1964, M. S. Moulds; 1♂, 1♀, 3 Jan., 1964, M. S. Moulds; 1♀, 6 Jan., 1964, M. S. Moulds; 1♀, 10 Apr., 1971, M. S. Moulds; 1♂, 25 May, 1974, M. Walford-Huggins (Moulds collection). 1♀, 3 Jan., 1964, M. S. Moulds; 1♂, 23 May, 1974, M. Walford-Huggins (National Museum of Victoria). 1♀, 6 Jan., 1964, M. S. Moulds; 1♂, 25 May, 1974, M. Walford-Huggins (Queensland Museum collection). 1♀, 6 Jan., 1964, M. S. Moulds (South Australian Museum collection). 1♂, 5-10 May, 1968, G. B. Monteith; 1♂, 11-17 May, 1968, G. B. Monteith; 2♂, 7♀, 1-9 June, 1971, G. B. Monteith (University of Queensland collection). 1♂, emerged 5 Sep., 1974, 2♀, em. 16 Oct., 1974, 1♂, 1♀, em. 17 Oct., 1974, 1♂, 1♀, em. 18 Oct., 1974, 1♂, 1♀, em. 19 Oct., 1974, all bred ex ova, M. Walford-Huggins (Walford-Huggins collection).

SILVER PLAINS HOMESTEAD. 1♂, 20 Dec., 1958, J. L. Wassell (Australian National Insect Collection).

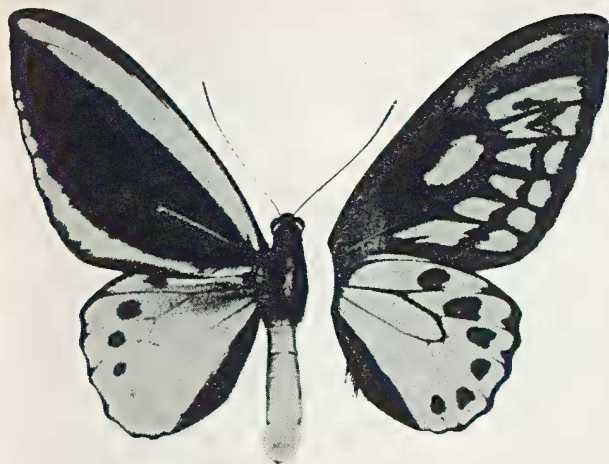
COEN. 1♀, Dec., 1905, H. Hacker (National Museum of Victoria collection).

Much of this material is summarised under *O. p. pronomus* by Monteith (1972) who records specimens collected in April and from July to January. In addition, specimens listed above have been taken in May. No doubt, adults will be found to occur throughout the year following collecting in the area during February and March.

There are three further ♂ specimens in the Australian Museum collection labelled "Cape York, G. Purcell", and dated 11.10.43, 11.10.43 and 12.10.43 respectively, and each bearing an additional label stating "Passed through C. W. Wyatt Theft Collection 1946-1947". Although the collector's labels are apparently in the collector's own hand, it is obvious that two of these did not come from Cape York. Both disagree markedly with other known males collected at Cape York. That bearing the date 12.10.43 is of the new race described below and therefore almost certainly came from the Iron Range-McIlwraith Range district and one of the specimens bearing the date 11.10.43 clearly belongs to the race *poseidon* Doubleday and must be from the Torres



FIGS 1 & 2. *Ornithoptera priamus pronomus*. 1, ♂, upperside (left), underside (right). 2, ♀, upperside (left), underside (right).



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FIGS 3 & 4. *Ornithoptera priamus macalpinei* subsp. n. 3, ♂ paratype, upperside (left), underside (right). 4, ♀ paratype, upperside (left), underside (right).

Strait Islands or New Guinea. It is known that Wyatt removed labels from some of the material stolen and replaced them with labels bearing his own data and name. In addition, labels from some specimens had been exchanged with those on others.

There is also one ♀ specimen in the National Museum of Victoria collection labelled "Nov., 1912-Feb., 1913, J. A. Kershaw, Passed through C. W. Wyatt Theft Collection 1946-1947" which belongs to the race described here.

Description

Closest to *Ornithoptera priamus pronomus* (Figs 1 & 2) but is distinguishable from it in the following ways:-

Male (Fig. 3):- Forewing: upperside usually with metallic green terminal and submarginal band less extensive towards apex and narrowed or broken near base, central green streak usually very narrow and sometimes absent, hindwing with black subterminal spots usually more pronounced than in *O. p. pronomus*; underside with metallic green areas less extensive, that in cell smaller; the inner and outer green areas in cells M_1-CuA_2 never meeting; the metallic green in cell R_5 partly or wholly broken (sometimes entire) while in *O. p. pronomus* is clearly broken.

Hindwing: upperside with black basal dusting distinct; black edge broader; underside with black border of cell distinct at least as far as junction with vein CuA_2 , occasionally entire.

Female (Fig. 4):- In general, darker than *O. p. pronomus*, the white of the forewing averaging less extensive and the yellow areas on the upper and underside of hindwing smaller.

Measurements:- ♂, forewing length 6.0-7.5 cm (average 6.7 cm).
♀, forewing length 6.0-9.0 cm (average 7.8 cm).

I have named this insect after Dr D. K. McAlpine, Curator of Insects and Arachnids, Australian Museum, Sydney.

Distribution

Rain-forest areas within the Iron Range district and McIlwraith Range, Cape York Peninsula, north Queensland.

Life History

In early June, 1966, Dr D. K. McAlpine found young *Ornithoptera* larvae on a rain forest creeper at Iron Range. As no other *Ornithoptera* species are known from Australia it can be assumed that the larvae were those of *O. p. macalpinei*. The creeper, probably an *Aristolochia* sp. (Aristolochiaceae), bore spherical succulent indehiscent fruit with hard, heavy non-winged seeds. The leaves were elongate, elliptical, with a cordate base, and mature leaves were slightly tough. These larvae were not taken as difficulties in feeding were anticipated.

During May, 1973, I. G. Morhaus and C. G. Miller also found *Ornithoptera* larvae at Iron Range on a species of *Aristolochia*, probably *Aristolochia indica*, a common food plant of *O. p. euphorion* (Gray) in the Cairns district. The plant bore spherical dehiscent fruit, strongly ribbed longitudinally with flat, paper-like, non-winged seeds; leaves strongly cordate and acuminate.

Discussion

Despite some variation in the distinguishing characters it is possible to sort all the available male specimens of the new subspecies from authentic ones of *O. p. pronomus* on the basis of wing pattern. The degree of variation, however, is such that, in a longer series, there may be occasional specimens for which the identification requires confirmation from locality data.

The one known specimen (♀) labelled Coen agrees with the Iron Range population and almost certainly came from the rain forest areas a little east of Coen in the McIlwraith Range, an area only some 75 km south of the Iron Range rain forest area. The single ♂ from Silver Plains Homestead (approximately 35 km east of Coen) also clearly agrees with the Iron Range population. Apart from these two, all remaining specimens of this race have been taken in the rain forest area along the Claudie River, usually known as the Iron Range district. It is probable that the race will be found also in the adjacent Pascoe River rain forests.

Zeuner (1943) comments on the sharply different wing pattern of *O. p. pronomus* from the northern extremity of the Cape York Peninsula compared with that of *O. p. euphorion* to the south. He suggests that *O. p. pronomus* may be a very recent immigrant because of its greater morphological affinity to *O. p. poseidon*, that its inferior size and distinctness from *O. p. euphorion* despite the very small gap between the geographical ranges of the two subspecies.

O. p. macalpinei shows characters intermediate between *O. p. pronomus* and *O. p. euphorion*. It is, however, much closer to *O. p. pronomus* than to *O. p. euphorion*, the latter showing even greater melanism. This relationship is supported by the geographical relationship of these subspecies, *O. p. pronomus* being closer geographically to the new subspecies than is *O. p. euphorion*.

The Iron Range-McIlwraith Range rain forest areas are separated from those of the Bamaga-Somerset district at the northern extremity of Cape York Peninsula by some 240 km (150 miles) of generally dry, sparsely vegetated country including extensive sand dunes. Further, Montieth (1972) points out that the dry belt between Cooktown and Coen (Coen being only some 30 km from the rain forests of McIlwraith Range) has been an effective barrier to butterfly distribution; 23 species (6% of the Australian total) occur on the mainland only north of Coen, while there are a further 16 species which do occur further south but are represented there by distinct subspecies.

Apparently these dry belts which support no rain forest, have effectively isolated the Iron Range-McIlwraith Range population of *O. priamus* from those populations both to the north and south. *O. p. richmondia* (Gray) from southern Queensland and northern New South Wales has been similarly isolated. Zeuner (1943) noted that other subspecies of *Ornithoptera*, including those of *O. priamus*, have been effectively isolated by barriers of deep water, not necessarily of considerable expanse; *O. croesus croesus* and *O. c. lydius* for

example, which are separated by a channel no more than 16 km wide, are consistently distinct in many characters.

It is interesting to note that *O. p. macalpinei* somewhat resembles, in the male sex, *O. p. boisduvali* Montrouzier from Woodlark Island (see Borch and Schmid, 1973, for description and figures). The latter has a similar black margin to the cell of the hind wing and has even more reduced green markings on the underside of the forewing. It differs from *O. p. macalpinei* in the more marked black basal area on the upperside of the hindwing. The female, however, differs markedly from that of *O. p. macalpinei* in having the pale markings of the forewing almost completely obsolete. The geographical interposition of three other named races of *O. priamus* (*calistis* Rothschild, *poseidon* Doubleday, and *pronomus* Gray) renders further consideration of the distinction of *O. p. boisduvali* from the present race unnecessary.

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References

- Borch, H. and Schmid, F., 1973. On *Ornithoptera priamus caelestis* Rothschild, *demophanes* Fruhstorfer and *boisduvali* Montrouzier (Papilionidae). *J. Lepid. Soc.* 27(3): 196-205, figs 1-17.
- Common, I. F. B. and Waterhouse, D. F., 1972. *Butterflies of Australia*. 4to. Angus and Robertson, Sydney. Pp. i-xii, 1-498, illustr.
- Gray, G. R., 1853. *Catalogue of lepidopterous insects in the collection of the British Museum*. Part I. Papilionidae. 4to. Brit. Mus., London. Pp. i-iii, 1-84, pls I-XIII + suppl. pl.
- Gray, G. R., 1856. *List of the specimens of lepidopterous insects in the collection of the British Museum*. Part 1. Papilionidae. 12mo. Brit. Mus., London. Pp. i-iii, 1-106.
- Monteith, G. B., 1972. A list of butterfly records from the Iron Range area of Cape York Peninsula. *News Bull. ent. Soc.* Qd 85: 9-14.
- Zeuner, F. E., 1943. Studies in the systematics of *Troides* Hubner (Lepidoptera Papilionidae) and its allies; distribution and phylogeny in relation to the geological history of the Australian archipelago. *Trans. zool. Soc. Lond.* 25(3): 107-184, figs 1-115.